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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,504	12/12/2003	Charles Augustus Choate IV	BUR920020015US2	1005

7590 07/25/2008
IP Law Department, 972E
IBM Corporation
1000 River Street
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EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
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1792

MAIL DATE	DELIVERY MODE
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07/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Claims 9-12, 16 and 33-42 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tom (5,704,965). Tom (see Figs. 3 and 7, for example) discloses an apparatus for incorporating a fluid (gas or liquid – see col. 9, lines 6-21, for example) on a substrate. The apparatus comprises a fluid storage dispensing vessel that is properly described as “a deposition chamber” because it is filled by a deposition process.

Tom describes the fill process of his apparatus at col. 17, line 28 to col. 18, line 6. The fill process is a process of incorporating an impurity (e.g. the germanium in germane) in a thin film on the carbon sorbent substrate contained in the deposition chamber (e.g. cylinder 102 of Fig. 7). The fill process deposits the fill material (e.g. germane) by adsorption at low pressures (see col. 18, lines 7-13, for example), and it is therefore a low pressure deposition process, and the vessel is a low pressure deposition chamber.

Regarding the particular solid materials recited in claim 38, Tom makes clear (see Fig. 1 of Tom, for example) that ceramics such as zeolite were also well known in the prior art as sorbent materials for adsorbing fluids as a thin film on the ceramic sorbent material.

The impurity cell is a porous carbon sorbent material in a form such as beads, tablets, extrudates, cloth, web, honeycomb matrix monolith, etc. (see col. 12, lines 48-57, for example). The porous carbon is a cell as recited in claim 9, or alternatively each pore in the porous carbon is a cell. Tom’s apparatus comprises a cell comprising a substantially solid material (the above described carbon sorbent material) located

entirely within a deposition chamber (the gas cylinder described from col. 12, line 58 to col. 13, line 24, and gas cylinder 102 illustrated in Fig. 7, for example). An impurity (gas or liquid) such as germane is adhered to said exposed surfaces as recited in claim 9. It is noted that germane is a germanium containing fluid. Also, germanium is an impurity that is claimed in claim 10, and therefore the germane fluid of Tom is inherently "an impurity containing fluid adhered to said exposed surfaces" as recited in claim 9.

Regarding the limitation of "a substrate arranged within the deposition chamber, the substrate comprising a thin film formed thereupon by a process performed within the deposition chamber at the predetermined pressure", since the impurity cell also comprises a substrate having a thin film formed thereupon, the recited substrate does not distinguish the claims as written from the apparatus of Tom. The claims as written do not distinguish between the recited substrate and the impurity cell. The impurity cell recited of Tom can be considered to include a surface that is also a substrate as claimed.

Regarding the limitation of "an impurity cell for providing an impurity which is incorporated in the thin film during the same process which forms the thin film upon the substrate", it is noted that the purpose of Tom's sorbent (i.e. the impurity cell) is to "provide" an impurity. Also, the impurity it provides is the impurity incorporated in the thin film on the substrate, because the claimed substrate can be considered to be a part of the claimed impurity cell (sorbent) according to the claims as written.

Claims 9-12, 16 and 33-42 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wang (6,453,924). In the

paragraph bridging cols. 2 and 3, Wang incorporates the disclosure of Tom (5,704,965) and other related references. Therefore, all of the disclosure of Tom is included in Wang. Wang discloses an apparatus for supplying a dopant or impurity species (see col. 9, lines 33-41 of Wang) into a semiconductor thin film on a substrate. In the Fig. of Wang, the clean room represented by wall 22 is a chamber in which semiconductor processes such as deposition are performed, and therefore the clean room can properly be described as a low pressure deposition chamber. Impurity cells are located within the deposition chamber delineated by wall 22. The cells comprise the substantially solid sorbent material having exposed surfaces located entirely within the deposition chamber, and an impurity-containing fluid (such as germanium containing germane) adhered on said exposed surfaces. Also, regarding the limitations of claims 39-42, each impurity cell of Wang is contained within an enclosure in the form of local supply vessel 50 or local supply vessel 96, with an impurity source in the form of main liquid supply vessel 12 coupled to the enclosure (50 or 96) by a connector 18 which includes a valve.

Regarding the newly added claim recitations of “a low pressure deposition chamber maintained at a substantially uniform pre-determined pressure”, and “a thin film formed . . . at the predetermined pressure”, and “an impurity cell for providing an impurity . . . at the same predetermined pressure”, it is noted that a pressure limitation is a process-type limitation that does not so limit the present apparatus claims.

Claim 43 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which

was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The pressure range limitation of 200 mTorr or less is not supported by the specification as originally filed. This is a new matter rejection.

Applicants have argued that the apparatus of Tom and Wang do not include the structural limitations of the newly added claim language. As noted above, however, in the limitation of "a substrate arranged within the deposition chamber, the substrate comprising a thin film formed thereupon by a process performed within the deposition chamber at the predetermined pressure", since the impurity cell also comprises a substrate having a thin film formed thereupon, the recited substrate does not distinguish the claims as written from the apparatus of Tom. The claims as written do not distinguish between the recited substrate and the impurity cell. The impurity cell recited of Tom can be considered to include a surface that is also a substrate as claimed. Also, regarding the limitation of "an impurity cell for providing an impurity which is incorporated in the thin film during the same process which forms the thin film upon the substrate", it is noted that the purpose of Tom's sorbent (i.e. the impurity cell) is to "provide" an impurity. Also, the impurity it provides is the impurity incorporated in the thin film on the substrate, because the claimed substrate can be considered to be a part of the claimed impurity cell (sorbent) according to the claims as written.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Richard Bueker/
Primary Examiner, Art Unit 1792